

The ephemerality of an organic material and its implications: a context-specific study with invasive exotic species (Japanese knotweed) waste in Genk, Belgium

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Abstract

"Our thinking is not prepared to face existence, to face the infinitude of the finite, to live and think from the medium" (Marder, 2016).

We, as humans inside of a human centered system called Anthropocene are constantly facing our own individual limitations. If we want to improve our relation with our own ecosystem, to live life together in harmony, in collaboration and with responsibility (Haraway, 2019) we have to start thinking from the outside, de-centering linear systems and understanding round cycles and us, as part of a whole. In this occasion, we propose a nature centered design experience, experimental, artistic, and intuitional research focused on the reuse of invasive species plant waste from the Japanese knotweed applied to an artistic-experimental material research, in a specific area of Belgium, a different research space than usual. Our conclusions will focus on the sensitive and emotional characteristics of the resulting material, proposing its ephemerality and fragility as a communication tool that promotes circularity. Under the title 'What doesn't belong here', the collaboration between the PhD student Antía Iglesias from the University of Vigo in Spain, and the research group Inter-actions of the LUCA School of Arts, campus C-mine in Genk, was born. This collaboration focused firstly on the interactions between non-human agents and design processes, taking as starting point Iglesias' main thesis, the reuse of waste derived from Invasive alien species applied to creative practice; aiming to decentralize human-centered design, looking for the creation of a material prototype.

Introduction

What follows is a description of a research experience carried out from March to June 2022 in Genk in Belgium. First weeks of the research stay were used to get to know and comprehensively understand the new working environment and its possibilities. Previous works of the host research group were already focused on the Japanese knotweed (JK) plant species. The publication *Not in my backyard!* is a compendium of the research carried out in the specific course 'Shifting grounds', part of the Product Design master's degree at LUCA School of Arts. Its, and our approach, was focused on working in collaboration with, or becoming-with (Haraway, 2016) the invasive species Japanese knotweed.

Invasive Exotic Species and the Japanese knotweed

As defined by the European Commission, Invasive Alien Species (IAS) are plants that are introduced accidentally or deliberately into a natural environment where they are not normally found, with serious negative consequences for their new environment. They are usually fast-growing and easily spreading species, historically used as ornamental plants, cattle feed, for cultivation, or for timber.

Japanese knotweed is a plant native to Southeast Asia; Japan, Korea, and China. It was introduced in Europe in 1830 by the German botanist Vin Siebold as a fodder plant in the Netherlands, both for livestock feed and as an ornamental plant. It is a perennial herbaceous plant with above-ground stems up to 3 meters high and a flowering period from August to September. The color of the stem as well as the reverse side of the leaves is an intense fuchsia mottled with light green. Its reproduction by rhizomes favors a fast and efficient dispersion. Fast growing allows it to occupy a large part of the land, choking out the native species, this puts the biodiversity of the affected areas at risk.

The problematic

Connotations of working with invasive species range from the ecological and environmental, social, economic, and political spheres to its artistic reformulations. 'It is interdisciplinarity in the broadest sense of the word, examining the relationships between ecology and economics, politics and history, design decisions and land use planning, as well as the relationships between people and the ecosystems that sustain them' (Orion, 2015 pp 9). It is possible to see how society is currently divided and that there is a void in the specific knowledge that derives in an uninformed community. For the residents of the affected areas, these species are a pest to be eliminated by uprooting or pruning the land adjacent to their homes. For municipalities and local authorities, the extraction plans involve workloads, time, and economic funds that are never sufficient due to the persistence of the species in re-appearing, and usually post-treatment of affected areas is prejudicial to autochthonal flora (Orion, 2015).



Context network

The first step was to contact institutions that had a direct relationship with this and other invasive species. We met the *Maasvallei rivier* park, an organization located in the river Maas basin. This organization's specialization is the restoration of natural environments. We could observe how to control invasive herbaceous populations through the introduction of wildlife, such as wild cows and horses that feed on these species, and regulate the area in a semi-controlled manner. This process of 'rewilding nature' is being promoted in certain areas of the country as it promotes the renaturation of post-industrial areas, such as the old sand quarries surrounding the rivers in the Flemish region.

We also contacted *Timelab*, in Gent, and the *Knot Factory* project. This group of engineers and designers works under the premises of reshaping community land, rethinking industry, and redefining cultural spaces. This team sought to develop circular materials for decentralized production, achieving an open-source material called *Knotplex*, a biodegradable binder made entirely from JK.

Moreover, we get to know the work of the company *Knotweed paper*, based in Slovenia. It was created by Trajna, an interdisciplinary collective focused on creative research and circular economy, specialized in finding sustainable solutions for the management of invasive plants. With this aim and with the collaboration of a former local paper mill, this team develops semi-kraft paper from the waste generated by the extraction of the Japanese knotweed plant in the surrounding area of Ljubljana.

Laboratory research and experimental results

Fieldwork was focused on two points, the understanding of the species and its implications and the development of a material from this raw matter. How can we create art from plant waste and how can we reflect invasive species problematic's in global/local ecosystems? Methodologically, the process was approached as an artistic experimentation with scientific behaviors that helped to maintain an objective vision and clear guidelines.

Workshop space was an improvised laboratory, an empty room in the basement of the LUCA School of Art, C-mine Campus. It was ventilated and with two large tables. The working tools: a bathtub measuring 100 x 70 x 30 cm, a domestic glass mixer, an electric cooker, various bowls, scissors,

and wooden frames covered with tulle cloth. Raw matter was collected in the vicinity of the village of Genk and samples were divided into its parts, stem, skin, and leaves. We obtained two materializations of the plant: a paper-type support and the pigments from its color palette.

Considering this project was limited to a concrete period, it was decided to reuse all paper used to embody theoretical research, as a cellulose source. This recycled material allowed the non-cooked fibers to adhere to each other.

The raw matter was mechanically processed by separating the fibers into transmutable pieces of max 2 cm in length and mixed with the recycled cellulose in proportions (30%-70%; 40%-60%; 50%-50% of cellulose and fibers from different parts of the plant). This mixed mass was introduced into the bathtub with different proportions of water and natural glue. Then, using the wooden frames (paper formers), each paper-like sheet was produced and leave to dry over a flat surface. Finally, samples were coated with a homemade varnish based on linseed oil, beeswax, and pine resin. In addition to providing durability and imperishability to the material, the use of the oil favored transparency in the areas with a higher concentration of cellulose, recreating organic textures that helped to maintain the natural discourse linked to the material.

The resulting samples were cataloged according to the source material and the ratio of recycled cellulose to pure raw material. Due to technical limitations, it was not possible to carry out physical-mechanical tests on the material, so we focused our attention on the optical and poetic characteristics, those that allow us to recreate and reflect ephemerality.

Visually the material maintains the tone of the leaves of the plant. Also, interspersed in the middle of the fibers, we can find annotations, temporary traces of words that constantly refer us to the conceptual origin of the material. The sheets, measuring approximately 25 x 35 cm and 0.10-0.30 mm thick, bestow a visual reminder of its organic origin, understanding its ephemerality as a powerful communicative resource.

The object/artifact resulting from the research was a prototyped bio-compostable pillow made of a pressed material, manually sewn with 100% unbleached cotton thread, filled with dried leaves of the species, and in several sizes (Figure 1).



Figure 1. Japanese knotweed pillows and raw matter.

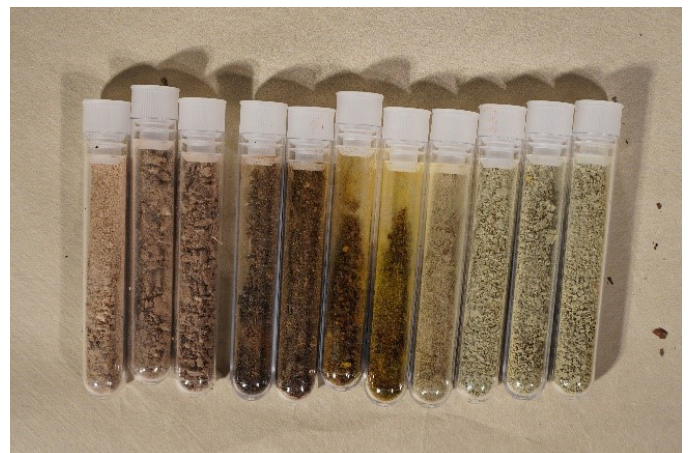


Figure 2. Japanese knotweed color palette in its powder structure.

The developed color research was carried out using the lake pigment method. A lake pigment is made by precipitating a soluble dye with an inert base to create an insoluble pigment (Jacqui Symons, 2019). By developing a chemical reaction on the dye, obtained by bowling different parts of the plant material for at least one hour, we obtained a color palette from moss green to a huge range of yellow variations and light browns (Figure 2).

Conclusions

The aim of this research was, on one hand, to develop a material whose storytelling capacities could connect us with the natural cycles, remembering us of the finite nature of resources and, on the other hand, to standardize or develop a guide on how to understand and work with the subject of invasive species, understanding their significance, origin, possibilities and all the implicit connotations. A method that is applicable to other ongoing projects related to art co-creation and organic waste.

It is after describing the whole process of creation and relying on the words 'we must grow from the medium' (Marder, 2016) that we tried to integrate ourselves within the ecological cycles. The concept of ephemerality is fundamental: as plants, the material is not born or died it is in an infinite cycle of births

and deaths within an interconnected network of knowledge and learning (Marder, 2016).

It is by setting up relationships in our academic system that we can approach the idea of collaboration and interdisciplinarity inherent to nature. Ecology, from the Greek *oikos* - house and *logia* or *logos* - treatise, constitutes the study of the habitat of living beings.

If we go a little deeper into the term coined by Ernest Haeckel in the 19th century, we approach the concept of *niche*, which relates to the interdependent characteristics of living and inert beings that coexist with the species. We, as IAS inhabit a niche that is not only ours, altering the living cycles of others. Orion already reflected on it 'If we are to restore and enhance populations of native species, then we must restore our sense of belonging within the ecosystems that we depend upon. We must reimagine restoration as a practice that takes place in all ecosystems, especially those from which we derive daily needs' (Orion, 2015 pp8). By accepting the finitude of objects and seeking their reintegration into the natural world rather than the artificial, human-invented perpetuity, we can become nature. Making people aware that this is possible is a first step, and by using the languages of art and design, prototyping, and physical experimentation we can move closer to more desirable and environmentally friendly futures.

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